

WHAT IS CLAIMED IS:

1. In an implantable cardiac device, a method for determining heart rate recovery of a patient comprising:

(a) monitoring a changing heart rate of the patient and producing heart rate measurements;

(b) identifying a first heart rate when at least one of the following conditions occurs: (i) at least one heart rate measurement exceeds a first heart rate measurement threshold and (ii) an activity level of the patient exceeds a first activity threshold;

(c) identifying a second heart rate when at least one of the following conditions occurs: (i) at least one heart rate measurement falls below a second heart rate measurement threshold and (ii) an activity level of the patient falls below a second activity threshold; and

(d) using the first heart rate and the second heart rate to determine a measure of heart rate recovery.

2. The method of claim 1, wherein step (b) comprises identifying the first heart rate when at least one heart rate measurement exceeds the first heart rate measurement threshold for a predetermined period of time.

3. The method of claim 2, wherein step (b) comprises identifying the first heart rate when, for the predetermined period of time, heart rate intensity exceeds a heart rate intensity threshold.

4. The method of claim 2, wherein step (b) comprises identifying the first heart rate when, for the predetermined period of time, an average value of at least one heart rate measurement exceeds the first heart rate measurement threshold.

5. The method of claim 4, wherein step (b) comprises identifying the first heart rate when, for the predetermined period of time, an average heart rate intensity exceeds a heart rate intensity threshold.

6. The method of claim 1, wherein step (b) comprises identifying the first heart rate when the activity level exceeds the first activity threshold for a predetermined period of time.

7. The method of claim 6, wherein step (b) comprises identifying the first heart rate when, for the predetermined period of time, an average activity level exceeds the first activity threshold.

8. The method of claim 1, wherein step (c) comprises identifying the second heart rate when the activity level falls below the second activity threshold for a predetermined period of time.

9. The method of claim 8, wherein step (c) comprises identifying the second heart rate when, for the predetermined period of time, an average activity level falls below the second activity threshold.

10. The method of claim 1, wherein step (c) comprises identifying the second heart rate when, after a predetermined period of time, the following conditions occur: (iii) a heart rate measurement is less than the heart rate measurement of step (c)(i), and (iv) the activity level falls below a third activity threshold.

11. The method of claim 10, wherein step (c) comprises identifying the second heart rate when an average activity level falls below the third activity threshold.

12. The method of claim 10, wherein step (c) comprises identifying the second heart rate as the lowest heart rate measured during the predetermined period of time.

13. The method of claim 1, further comprising after step (a) filtering heart rate measurements to remove premature heartbeats.

14. The method of claim 1, wherein in step (d) the second heart rate is subtracted from the first heart rate to determine a measure of heart rate recovery.

15. An implantable cardiac device for determining heart rate recovery of a patient, comprising:

- means for monitoring a changing heart rate of the patient and producing heart rate measurements;

- means for identifying a first heart rate when at least one of the following conditions occurs: (i) at least one heart rate measurement exceeds a first heart rate measurement threshold, and (ii) an activity level of the patient exceeds a first activity threshold;

- means for identifying a second heart rate when at least one of the following conditions occurs: (i) at least one heart rate measurement falls below a second heart rate measurement threshold, and (ii) an activity level of the patient falls below a second activity threshold; and

- means for transmitting the first heart rate and the second heart rate to an external device to determine a measure of heart rate recovery.